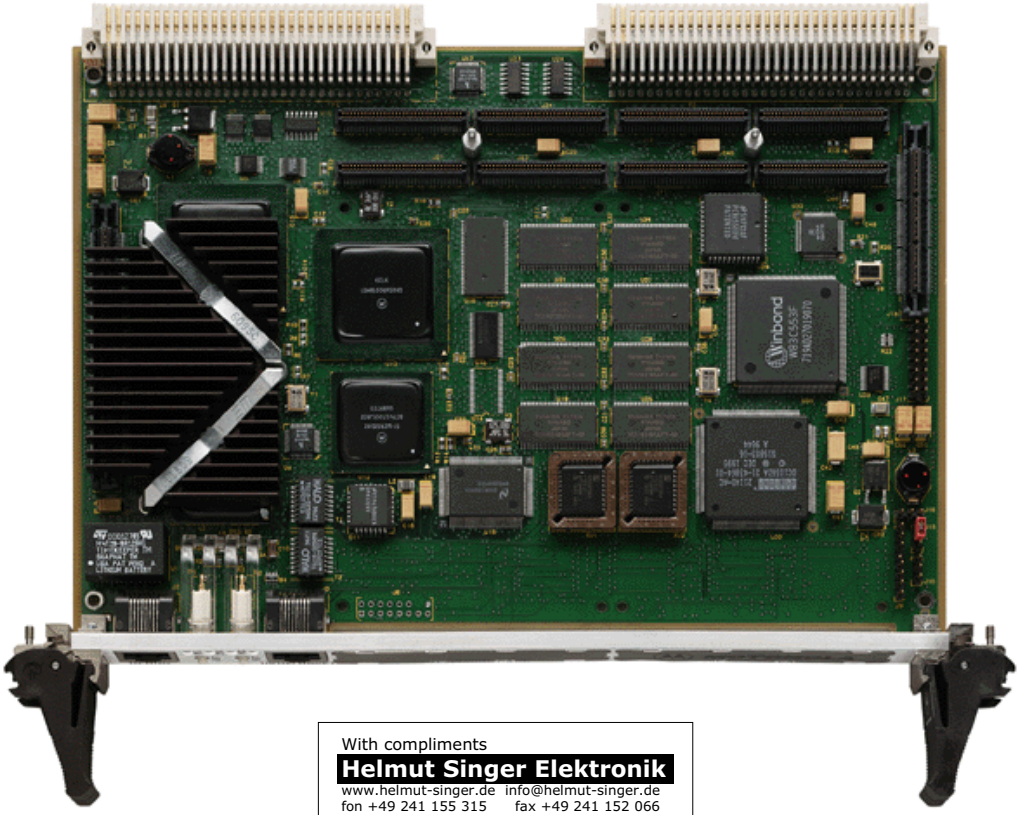
MOTOROLA COMPUTER GROUP

Board Level Products

MVME2300 Series
VME Processor Modules



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Advantages

The MVME2300 series of VME boards provides the performance of Motorola's PowerPlus Architecture, and the ability to fully customize your application with two PCI Mezzanine Cards (PMCs).

Utilizing Motorola's PowerPC 603™ or PowerPC 604™ 32-bit microprocessors, the Peripheral Component Interconnect (PCI) bus for the on-board peripherals, processor/memory bus to PCI bus bridge, and a VME interface, the MVME2300 processor modules pack optimum levels of flexibility and performance into a single VME slot.

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Features

- PowerPC 603 or PowerPC 604 32-bit microprocessor
- L1 cache—16KB/16KB PowerPC 603 or 32KB/32KB PowerPC 604
- 16MB to 128MB of on-board ECC DRAM
- Two 32-pin PLCC/CLCC sockets for Flash memory; up to 1MB capacity for on-board firmware or user-specified requirements
- 4MB on-board Flash memory for user-specified requirements
- On-board debug monitor with self-test diagnostics
- Two IEEE P1386.1 compliant 32/64-bit PMC expansion slots with front panel and P2 I/O
- 64-bit PCI expansion mezzanine connector
- 8K x 8 NVRAM and time-of-day clock with replaceable battery backup
- One asynchronous serial debug port
- Four 32-bit timers, one 16-bit timer, one watchdog timer
- Ethernet transceiver interface with 32-bit PCI local bus DMA, 10/100Mb/s with auto-negotiate speed select
- A32/D32/BLT64 VMEbus master/slave interface with system controller function; high-performance DMA supports VMEbus D64 and 64-bit PCI local bus memory burst cycles
- 4-level requester, 7-level interrupter, and 7-level interrupt handler for VMEbus
- One VME slot, even when fully configured with two PMCs

The Motorola Commitment

Motorola Computer Group is committed to providing best-in-class embedded computing solutions. The MVME2300 series reinforces this commitment by providing superior hardware, price performance, and faithfulness to the tenets of open computing: modularity, scalability, portability, and interoperability.

The MVME2300 is offered with a five-year limited warranty which reduces the cost of ownership and demonstrates our commitment to quality and reliability of products to our OEM partners.

Motorola Computer Group is ISO9001 registered, and provides world class quality in manufacturing, engineering, sales, and marketing.

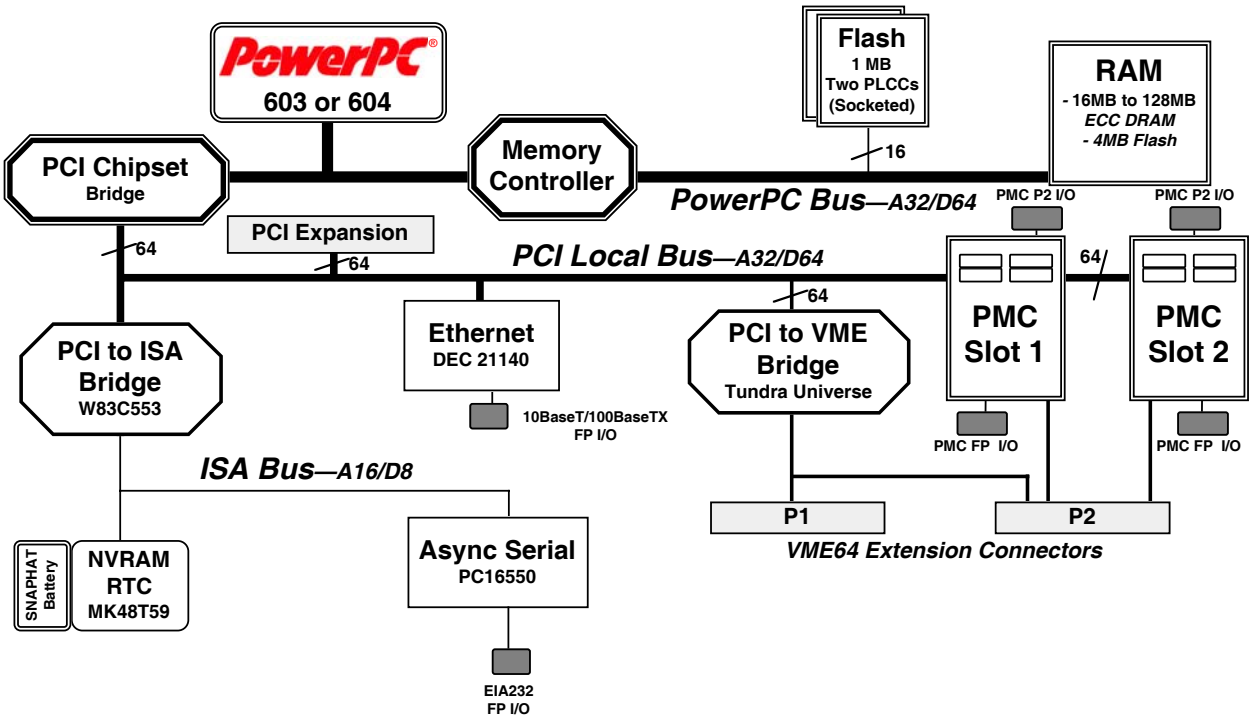
Ordering Information

Part Number	Description
MVME2301	200 MHz MPC603, 16MB ECC DRAM, 5MB Flash
MVME2302	200 MHz MPC603, 32MB ECC DRAM, 5MB Flash
MVME2303	200 MHz MPC603, 64MB ECC DRAM, 5MB Flash
MVME2304	200 MHz MPC603, 128MB ECC DRAM, 5MB Flash
MVME2305	300 MHz MPC604, 16MB ECC DRAM, 5MB Flash
MVME2306	300 MHz MPC604, 32MB ECC DRAM, 5MB Flash
MVME2307	300 MHz MPC604, 64MB ECC DRAM, 5MB Flash
MVME2308	300 MHz MPC604, 128MB ECC DRAM, 5MB Flash

Note: MVME230*x*-900 series available with original style VMEbus ejector handles

Related Products	
PMCSPAN-002	Primary PCI expansion, mates directly to the MVME2300 providing slots for either two single-wide or one double-wide IEEE P1386.1 compliant PMC cards; optional PMCSPAN-010
PMCSPAN(1)-002	PMCSPAN-002 with original style VMEbus ejector handles
PMCSPAN-010	Secondary PCI expansion, plugs directly into PMCSPAN-002 providing two additional PMC slots
PMCSPAN(1)-010	PMCSAN-010 with original style VMEbus ejector handles
MPMCxxx	Motorola's family of PMC modules; ask your sales representative for details

Documentation	
V2300A/IH	MVME2300 Installation and Use
V2300A/PG	Programmer's Reference Guide
PMCSPANA/IH	PMCSPAN Installation Guide
PPCBUGA1/UM	PPC1BUG User's Manual, Part 1 of 2
PPCBUGA2/UM	PPC1BUG User's Manual, Part 2 of 2
PPCDIAA/UM	Firmware Diagnostics Manual



MVME2300 Block Diagram

IEEE P1386.1 Compliant PMC Slots

The MVME2300 features dual PMC ports with support for both front panel and P2 I/O. P2 I/O–based PMCs which follow the PMC committee recommendation for PCI I/O when using the VME64 extension connector will be pin-out compatible with the MVME2300.

In addition to providing high performance expansion I/O, the IEEE P1386.1 compliant PMC ports form a common architecture for future generations of products. Changing I/O requirements can be satisfied by simply replacing PMCs while reusing the same base platform, reducing the long-term cost of ownership.

VME64 Extension Connector

To maximize the capabilities of the MVME2300, 5-row 160-pin DIN connectors replace the 3-row 96-pin connectors historically used on VME for P1 and P2. Two rows, Z and D, have been added to the VME P1/J1 and P2/J2 connectors providing a user with additional I/O. The VME64 extension connector is 100% backward compatible with existing VME card systems.

PowerPlus Architecture

The PowerPlus Architecture is a processor and bus architecture fully optimized to get the maximum performance from the PowerPC® microprocessor family, the PCI bus, and the VMEbus. The outstanding performance of VME processor boards based on the PowerPlus Architecture is not due to a single factor. A number of elements in the design of the PowerPlus Architecture contribute to its outstanding performance including the Processor/Memory subsystem, high-speed local bus, optimally decoupled architecture, decoupling the processor from PCI, and the advanced VME interface which reduces PCI delays. More detail is available on the PowerPlus Architecture in the MVME2600 datasheet. Contact your sales representative for details.

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Specifications

MVME2300 VME Processor Module

Processor

Microprocessor:	MPC603	MPC604
Clock Frequency:	200 MHz	300 MHz
On-chip Cache (I/D):	16KB/16KB	32KB/32KB
SPECint95, measured:	not available	10.8
SPECfp95, measured:	not available	9.72

Memory

ECC Protected Main Memory:	Dynamic RAM with 66 MHz bus
Capacity (60ns EDO):	16 or 32MB
Capacity (50ns EDO):	64 or 128MB
Single Cycle Accesses:	9 Read/4 Write
Read Burst Mode (60ns):	9-1-2-1 idle; 3-1-2-1 aligned page hit
Read Burst Mode (50ns):	8-1-1-1 idle; 2-1-1-1 aligned page hit
Write Burst Mode:	4-1-1-1 idle; 3-1-1-1 aligned page hit
Architecture:	128-bit, 2 way interleaved
EEPROM/Flash:	On-board programmable
Capacity:	1MB via two 32-pin PLCC/CLCC sockets; 4MB surface mount
Read Access (4MB port):	68 Clocks (32 byte burst)
Read Access (1MB port):	260 Clocks (32 byte burst)
NVRAM:	8KB; 4KB available for users
Cell Storage Life:	50 years at 55° C
Cell Capacity Life:	10 years at 100% duty cycle
Removable Battery:	Yes

VMEbus ANSI/VITA 1-1994 VME64 (IEEE STD 1014)

DTB Master:	A16-A32; D08-D64, BLT
DTB Slave:	A24-A32; D08-D64, BLT, UAT
Arbiter:	RR/PRI
Interrupt Handler/Generator:	IRQ 1-7/Any one of seven IRQs
System Controller:	Yes, jumperable or auto detect
Location Monitor:	Two, LMA32

Ethernet Interface

Controller:	DEC 21140
PCI Local bus DMA:	Yes
Connector:	Routed to front panel via an RJ-45

Asynchronous Serial Port

Controller:	PC16550
Connector:	Routed to the front panel via an RJ-45

Counters/Timers

TOD Clock Device:	M48T59; 8KB NVRAM
Real-Time Timers/Counters:	Four 16-bit programmable
Watchdog Timer:	Time-out generates reset

Miscellaneous

Front panel:	Reset and Abort switches; four LEDs for Fail, CPU, PMC1, PMC2

IEEE P1386.1 PCI Mezzanine Card Slot

Address/Data:	A32/D32/D64, PMC PN1, PN2, PN3, PN4 connectors
PCI Bus Clock:	33 MHz
Signaling:	5V
Power:	+3.3V, +5V, ±12V, 7.5 watts maximum per PMC slot
Module Types:	One double-wide or two single-wide front panel I/O or P2 I/O

Note: P2 I/O from PMC slot 2 is only accessible to systems equipped for VME64 extension connectors

PCI Expansion Connector

Address/Data:	A32/D32/D64
PCI Bus Clock:	33 MHz
Signaling:	5V
Connector:	114-pin connector located on the planar of the MVME2300

Power Requirements

	+ 5V ± 5%
MVME2300 w/ MPC603 @ 200 MHz:	4.0 A typical, 4.75 A max.
MVME2300 w/ MPC604 @ 300 MHz:	4.5 A typical, 5.5 A max.

Note: Power requirements are PMC dependent at +12 and –12 volts.

Demonstrated MTBF

Mean/90% Confidence:	190,509 hours/ 107,681 hours

Board Size

Height:	233.4 mm (9.2 in.)
Depth:	160.0 mm (6.3 in.)
Front Panel Height:	261.8 mm (10.3 in.)
Width:	19.8 mm (0.8 in.)
Max. Component Height:	14.8 mm (0.58 in.)

Environmental

	Operating	Nonoperating
Temperature:	0° C to +55° C, forced air cooling	–40° C to +85° C
Altitude:	5,000 m	15,000 m
Humidity (NC):	10% to 80%	10% to 90%
Vibration:	2 Gs RMS, 20–2000 Hz Random	8 Gs RMS, 20–2000 Hz Random

Regulatory Compliance

Intended for use in systems meeting the following EMI/RFI regulations:

US:	FCC Class B
Canada:	DOC Class B
Europe:	VDE Class B, CISPR-B, CE Mark
Safety:	All printed wiring boards (PWBs) are manufactured with a flammability rating of 94V-0 by UL recognized manufacturers.

Software Support

The MVME2300 is supported by a variety of operating systems, including a complete range of real-time operating systems and kernels.

For more information, visit our World Wide Web site at **http://www.mot.com/computer/**
For fax-back service dial **1-800-682-6128** in the U.S. and **602-438-4636** outside of the U.S.
To call us dial **1-800-759-1107** in the U.S. and **512-434-1526** outside of the U.S.
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